

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference P00036816-P0	FOR FURTHER ACTION		See item 4 below
International application No. PCT/JP2004/017527	International filing date (<i>day/month/year</i>) 18 November 2004 (18.11.2004)	Priority date (<i>day/month/year</i>) 21 November 2003 (21.11.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.			

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).																								
2.	This REPORT consists of a total of 7 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

<p style="text-align: center;">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p>	<p>Date of issuance of this report 24 July 2006 (24.07.2006)</p> <p>Authorized officer <div style="text-align: center; font-weight: bold;">Yoshiko Kuwahara</div></p> <p>e-mail: pt07@wipo.int</p>
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PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing
(day/month/year)

Applicant's or agent's file reference

P00036816-P0

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2004/017527

International filing date (day/month/year)

18.11.2004

Priority date (day/month/year)

21.11.2003

International Patent Classification (IPC) or both national classification and IPC

Applicant

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

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Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language
_____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	3, 8-13, 15, 17	YES
	Claims	1-2, 4-7, 14, 16, 18	NO
Inventive step (IS)	Claims	3, 9-12	YES
	Claims	1-2, 4-8, 13-18	NO
Industrial applicability (IA)	Claims	1-18	YES
	Claims		NO
2. Citations and explanations: <p>Claims 1 and 2 Document 1: JP, 8-242140, A (Advanced SAW Products SA.), 17 September, 1996 (17.09.96), full text, Figs. 10-13 and 22, & US, 005682126, A1</p> <p>Document 1 describes a SAW filter wherein electrode fingers constituting a comb-shaped transducer in series and a comb-shaped transducer in parallel are disposed almost continuously (for example, Fig. 22).</p> <p>Therefore, it would be obvious that in the almost continuous disposition as mentioned above, the disposition should ensure that elastic surface waves excited by two transducers do not counteract each other. The SAW filter of document 1 is not particularly different from the subject matters of claims 1 and 2.</p> <p>Accordingly, the subject matters of claims 1 and 2 do not appear to be novel.</p> <p>Claim 3 The constitution of a first inter-digital transducer and a second inter-digital transducer wherein they are in inverse phases to each other is neither described nor suggested in any of the documents cited in the ISR.</p> <p>Claim 4 It would be obvious that the resonant frequency of each inter-digital transducer must be set at a required frequency according to the specification of a given filter. Accordingly, the subject matter of claim 4 does not appear to be novel.</p> <p>Claim 5 Document 1 ([0031]) mentions that, in the constitution of a ladder-type filter, the resonant frequency of a transducer in series is made almost the same as the anti-resonant frequency of a transducer in parallel. Accordingly, the subject matter of claim 5 does not appear to be novel.</p> <p>Claim 6 Fig. 12 in document 1 shows a SAW filter wherein a reflector electrode is provided on the outermost part of a comb-shaped transducer in series and a comb-shaped transducer in parallel. The constitution in Fig. 12 therein is different from the subject matter of claim 6 in that the former has a spacer S1 provided between a first transducer and a second transducer. However, document 1 mentions in [0021] that transducers may not be separated by a spacer, in other words, such spacer may or may not be provided, as necessary. Accordingly, the said SAW filter is not particularly different from the subject matter of</p>			

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

claim 6, and so the said subject matter does not appear to be novel.

Claim 7

Fig. 13 in document 1 shows a SAW filter wherein a reflector (which corresponds to a strip line electrode in the present application) is provided between a first transducer and a second transducer, and finger electrodes of the first transducer, the second transducer and the reflector are disposed almost in a continuous way.

The said SAW filter is not particularly different from the subject matter of claim 7, and so the said subject matter does not appear to be novel.

Claim 8

Document 2: JP, 2001-358555, A (Seiko Epson Corp.), 26 December, 2001 (26.12.01), paragraph [0002]

Document 2 states that the pitch of a reflector is set at a half of the wavelength of SAW normally excited, i.e., a half of the pitch of a SAW resonator.

A person skilled in the art could have easily conceived of the constitution wherein the pitch of a strip line electrode is set between that of a first inter-digital transducer and that of a second inter-digital transducer in order to make the pitch of the strip line electrode almost equal to that of the first inter-digital transducer and to that of the second inter-digital transducer.

Accordingly, the subject matter of claim 8 does not appear to involve an inventive step.

Claims 9-12

The constitution wherein the pitch of a plurality of electrode fingers disposed in a boundary region between a first inter-digital transducer and a second inter-digital transducer is different from those of electrode fingers disposed in their respective central regions is neither described nor suggested in any of the documents cited in the ISR.

Claim 13

Document 3: JP, 2003-198317, A (Fujitsu Media Devices Ltd.), 11 July, 2003 (11.07.03), paragraphs [0011] and [0066]-[0078], Figs. 4, 18 and 24, & US, 0117240, A1

Document 3 mentions that the constitution of a ladder-type SAW filter where an elastic surface wave resonator provided with dummy electrodes is used broadens a pass band and improves a squareness ratio (ratio of bandwidth BW2 to bandwidth BW1 for a certain attenuation quantity).

A person skilled in the art could have easily conceived of the idea of a comb-shaped transducer provided with dummy electrodes as in document 3, in a SAW filter of document 1. Accordingly, the subject matter of claim 13 does not appear to involve an inventive step.

Claim 14

Fig. 10 in document 1 shows a SAW filter wherein a first transducer is disposed between two second transducers. The constitution in Fig. 10 therein is different from the subject matter of claim 14 in that the former has spacers provided between second transducers and a first comb-shaped transducer. However, document 1 mentions in [0021] that transducers may not be separated by a spacer, in other words, such spacer may or may not be provided, as necessary.

Accordingly, the elastic surface wave filter shown in Fig. 10 in document 1 is not particularly different from the subject matter of claim 14, and so the said subject matter does not appear to be novel.

Claim 15

Document 4: JP, 10-242799, A (Kyocera Corp.), 11 September, 1998 (11.09.98), paragraph [0040],

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

Table 1, Fig. 1

Document 4 mentions that the constitution in which the pitch of the electrode fingers of a resonator in series is different from that of the electrode fingers of a resonator in parallel improves filter characteristics such as sharp level change from the pass band to the rejection band and level flatness in the pass band.

A person skilled in the art could have easily conceived of the idea of making the pitch of the electrode fingers of a first transducer different from that of the electrode fingers of a second transducer as in document 4, in a SAW filter of Fig. 10 in document 1. Accordingly, the subject matter of claim 15 does not appear to involve an inventive step.

Claim 16

Fig. 11 in document 1 shows a SAW filter wherein a second transducer is disposed between two first transducers. The constitution in Fig. 11 therein is different from the subject matter of claim 16 in that the former has gaps (spacers) provided between first transducers and a second transducer. However, document 1 mentions in [0021] that transducers may not be separated by a spacer, in other words, such spacer may or may not be provided, as necessary.

Accordingly, the elastic surface wave filter shown in Fig. 11 in document 1 is not particularly different from the subject matter of claim 16, and so the said subject matter does not appear to be novel.

Claim 17

A person skilled in the art could have easily conceived of the idea of making the pitch of the electrode fingers of a first transducer different from that of the electrode fingers of a second transducer as in document 4, in a SAW filter of Fig. 11 in document 1. Accordingly, the subject matter of claim 15 does not appear to involve an inventive step.

Claim 18

Fig. 22 in document 1 shows a filter wherein SAW filters in each of which electrode fingers constituting a comb-shaped transducer in series and a comb-shaped transducer in parallel are disposed almost continuously are connected in multi-stages.

The said filter is not particularly different from the subject matter of claim 18. Accordingly, the subject matter of claim 18 does not appear to be novel.

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

- (1) Claim 2 contains the clause “so disposed that the elastic surface waves cannot be counteracted”. Generally, however, when there are two waves, it appears that they counteract each other at some locations, but do not at other locations (for example, with two light sources, a phenomenon of interference fringes occurs). What disposition is, therefore, meant by the clause “so disposed that the elastic surface waves cannot be counteracted” is unclear, without any indication of the locations at which waves cannot be counteracted.
- (2) Claim 3 contains the clause “a first inter-digital transducer and a second inter-digital transducer are so constituted that they are in inverse phases to each other”. Fig. 2 on page 8 gives an explanation of the inverse phases.

The explanation, however, is limited to Fig. 2, and as a result, what is meant by “disposed so that phases are inverse” is unclear.

For example, in Fig. 2, assuming a configuration where an electrode finger 221 is connected to the upper circuit electrode and an electrode finger 231 is connected to the lower circuit electrode, when an elastic surface wave 25 is at its top at the electrode finger 221, is an elastic surface wave 25 at its trough or at its top at the electrode finger 231? Or, to begin with, it is unclear whether the clause “disposed so that phases are inverse” assumes that an electrode finger 221 and an electrode finger 231 are always connected to the same circuit electrode.

Accordingly, what is claimed by claim 3 is not clear.

- (3) Page 8 contains the sentence, “it is desirable that, when a first IDT 202 and a second IDT 203 are so disposed that the elastic surface waves do not counteract each other, the first IDT 202 and the second IDT 203 be so constituted as to be in inverse phases to each other.”

However, the expression, “so disposed that the elastic surface waves do not counteract each other”, and the expression, “so disposed that they are in inverse phases to each other”, are both unclear, and as a result, it is unclear why “so disposed that they are in inverse phases to each other” means “so disposed that the elastic surface waves do not counteract each other”.

Accordingly, the descriptions in the specification are unclear. In addition, what is claimed by claim 3 referring to claim 2 is not clear.